Student Workbook

California Education and the Environment Initiative

10

World History
History-Social
Science Standard
10.4.1.

New Imperialism: The Search for Natural Resources

California Education and the Environment Initiative

Approved by the California State Board of Education, 2010

The Education and the Environment Curriculum is a cooperative endeavor of the following entities:

California Environmental Protection Agency

California Natural Resources Agency

Office of the Secretary of Education

California State Board of Education

California Department of Education

California Integrated Waste Management Board

Key Leadership for the Education and Environment Initiative:

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Key Partners:

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http://www.calepa.ca.gov/Education/EEI/

Alternative energy: Energy derived from sustainable sources, such as solar, wind, or water, rather than fossil fuels (petroleum-based fuels).

Biological diversity (biodiversity): A measure of the number of different species of organisms in a specific area, also used as a general description of species richness, ecosystem complexity, and genetic variation.

Botanical gardens: Public gardens that are used to collect, grow, study, and display plants from around the world.

Carbon cycle: The process by which carbon is exchanged between organisms and the environment (atmosphere, ocean, rocks, soil, and sediments).

Conservation: The management, protection, and use of resources and natural systems in a way that can meet current and future needs.

Deforestation: Clearing trees from a forested area.

Denudation: The practice of clearing an area of vegetation and forest cover.

Ecosystem goods: Tangible materials, such as timber and food produced by natural systems that are essential to human life, economies, and cultures.

Ecosystem services: The functions and processes that occur in natural systems, such as pollination, that support or produce ecosystem goods and help sustain human life, economies, and cultures.

Fossil fuels: Nonrenewable fuels, such as coal that formed from organic material over millions of years.

Fuel cell: A cell that produces a direct current from a chemical reaction between hydrogen and oxygen, which produces electric energy capable of fueling machines.

Hegemony: Leadership or dominance by one country or group over others.

Herbalist: A person who grows and collects herbs, especially medicinal herbs used to treat illnesses.

Imperialism: Political and military policies and practices that give one country control over the people, land, and resources in another region or country.

Industrialization: 1. Transformation of an economy from production of goods by human and animal labor to production by powered machines. 2. The changing of an area by creating industry, such as factories and power plants.

Infrastructure: The basic facilities and systems, such as railroads and power lines necessary to run an industrial economy.

Latex: A milky-colored fluid that is the sap of certain trees and other plants, such as rubber trees.

Malaria: A disease caused by a parasite called *Plasmodium* that occurs mostly in tropical areas, but can occur anywhere that mosquitoes thrive.

Medicinal: Chemicals, including pharmaceutical drugs, and other materials that can be used to treat illness or injury.

Missionary: A person acting to achieve and promote a specific purpose such as promoting a religion.

Monopoly: Sole control over a natural resource, good, service, or industry.

Natural resources: Materials, such as water, minerals, energy, and soil that people use from nature and natural systems.

Parasite: An organism that lives on or in a host organism and can only survive through the nutrients taken from the host.

Quinine: A chemical extracted from the bark of *Cinchona* trees and used to prevent or treat malaria.

Strategic: A well-thought-out plan or action intended to achieve a particular goal.

Tropical rainforest: Lush, dense forests found in the region that lies between the Tropic of Cancer (23.5º north) and the Tropic of Capricorn (23.5º south).

Urbanization: The changing of rural and natural areas to densely populated urban areas as a result of large-scale migration to cities.

Name: _____

Instructions: Answer the following questions based on ***California Connections: Paving the Way for a Cleaner Tomorrow*** and what you already know about the Industrial Revolution. (2 points each)

1. What pressures are encouraging the development of hydrogen fuel in California?

2. Why was hydrogen chosen as a source of fuel?

3. What role do the federal and state governments play in developing the "Hydrogen Highway"?

4. Is the United States the only nation in which people are pursuing hydrogen as a fuel source? How do you know?

5. Why do you think that some nations have access to resources including fuels while others do not?

6. What is the shared vision for the future in the attempts to create hydrogen networks, as stated in ***California Connections: Paving the Way for a Cleaner Tomorrow***?

Name: _____

Background

The Industrial Revolution greatly increased the need for natural resources. As countries expanded their economies and modernized their infrastructures, they required more raw materials. Limited natural resources at home motivated industrial powers such as the United States, Japan, and many European nations to look elsewhere to get the materials needed to industrialize. Industrialization included such tasks as manufacturing goods, building factories, railways, and ships, and constructing communication lines. Additionally, industrialization led to urbanization as increasing numbers of workers moved to cities where there were factories and work.

Most of the natural resources discussed in this lesson are ecosystem goods. These materials are essential to people because they provide such necessary items as food and fuel. Ecosystem goods are made possible by ecosystem services, which are natural processes that support or produce the goods that help sustain human life, economies, and cultures. Without ecosystem services like pollination and the water cycle, people would not have the natural resources needed for their survival.

Industrializing nations desired specific ecosystem goods to satisfy their growing populations' needs and to promote economic growth. Each of these goods depended in turn on specific ecosystem services. Natural resources were needed to:

1. Provide fuel to run industrial machines
   - ecosystem goods desired: coal, wood
   - related ecosystem services: pest and disease control, water cycle, decomposition

2. Provide raw materials for manufacturing
   - ecosystem goods desired: wood, latex (natural rubber), cotton, palm oil, iron ore
   - related ecosystem services: nutrient cycling, maintenance of diverse varieties of plants, water cycle

3. Provide food for growing populations in imperial countries
   - ecosystem goods desired: wheat (grains), tea, cacao, coffee, sugar
   - related ecosystem services: nutrient cycling, pest and disease control, seed dispersal, water cycle

4. Provide medicinal remedies for epidemic diseases
   - ecosystem goods desired: quinine (medicinal plants)
   - related ecosystem services: water cycle, nutrient cycling, maintenance of diverse varieties of plants, carbon sequestration

5. Provide a "laboratory" for scientific exploration (tropical medicine, map making, forestry, agriculture, geology, botany, zoology)
   - ecosystem goods desired: plants, soils, animals
   - related ecosystem services: water cycle, nutrient cycling, maintenance of diverse varieties of plants, pest and disease control

Natural resources became the primary need of the industrial nations. Access to such resources, ecosystem goods, and ecosystem services, then, became a necessary part of industrialization.

Name: _____

Making a Chain

Instructions: Your group has a stack of cards. There are four categories of cards: industrialization cards, ecosystem goods cards, ecosystem services cards, and potential problems cards. Your task is to show relationships between industrialization, the environment, and challenges that might arise because of increased industrialization.

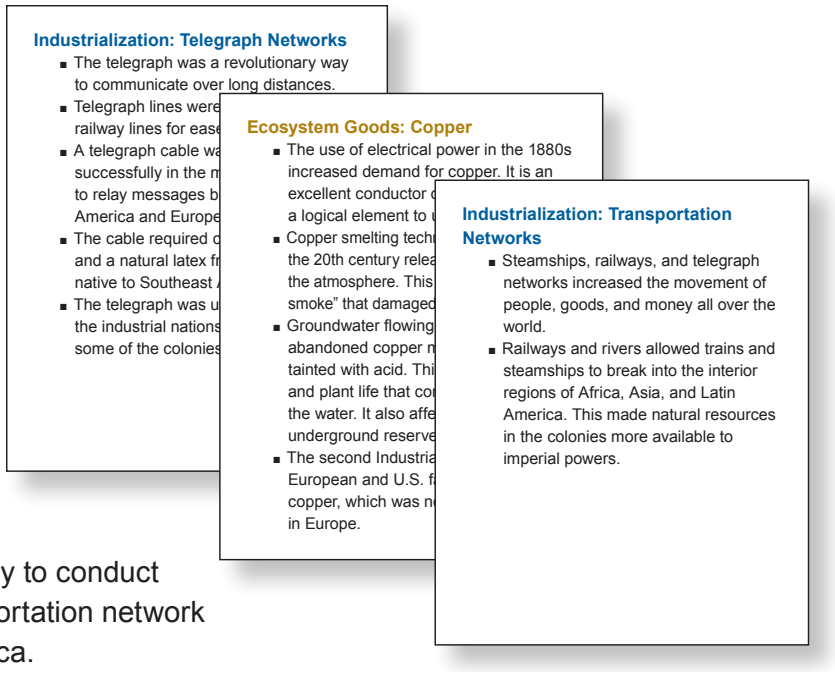
Follow these steps in order to demonstrate the relationships:

1. Separate your cards by category.
2. Read through the cards and discuss the ways in which some of them are related.
3. Make a "chain" by placing the cards next to each other to show the relationship between three or more of the cards.
4. On your worksheet, record the chain that your group creates by writing the title of each card.
5. Place arrows between each title. Underneath the chain, briefly describe the relationship between the cards.
6. Repeat until you create three chains. You may use the same card for more than one chain, and you do not have to use a card from each category for each chain.

For example, you might choose to link the following:

Example 1

Telegraph networks → copper → transportation networks

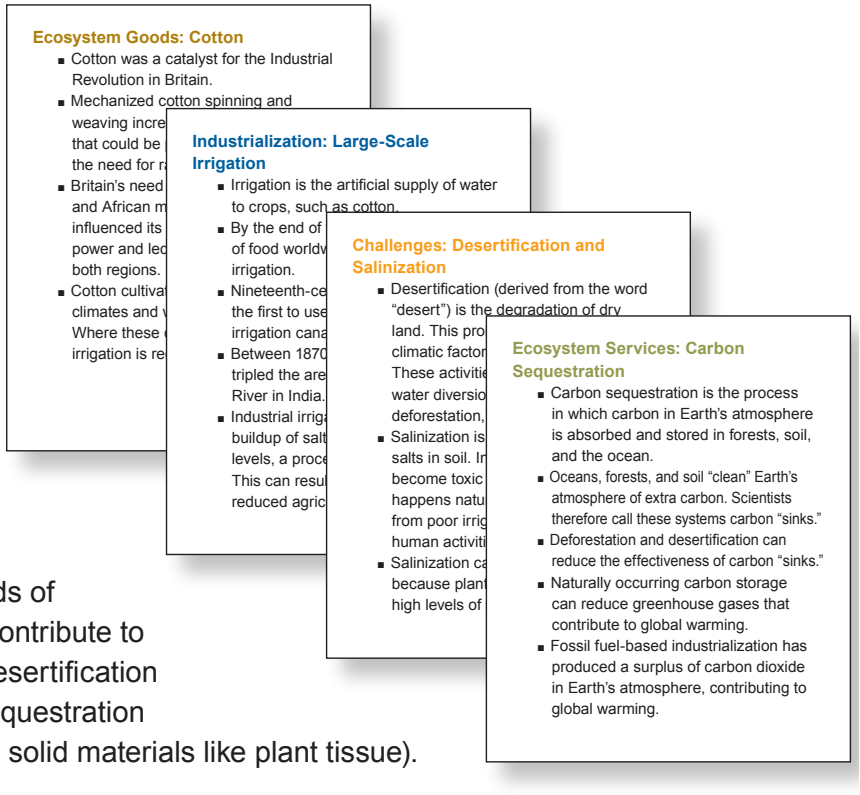


Explanation: Telegraph networks require copper because of its ability to conduct electricity, which requires a transportation network to access the copper mines in Africa.

Name: _____

Example 2

Cotton → large-scale irrigation → desertification and salinization → carbon sequestration



Explanation: As demand for textile goods increases, so does the demand for cotton. Increased cotton production requires methods of large-scale irrigation, which can contribute to desertification and salinization. Desertification can limit the process of carbon sequestration (absorption/collection of carbon in solid materials like plant tissue).

Chains of Causality

Please list your group's three chains following the examples above. (5 points each chain)

Chain #1:

Explanation:

Name: _____

Chain #2:

Explanation:

Chain #3:

Explanation:

Instructions: Read and respond to the following questions. (5 points each)

1. How do ecosystem services and ecosystem goods work together to produce resources that people need?

Name: _____

2. Why did industrializing nations seek natural resources in other countries?

3. Why do you think providing medicines for diseases is considered a major role of natural resources in fueling industrialization?

4. Explain the relationship between industrialization and ecosystem goods and services that you discovered in your group activity.

Name: _____

Part 1

Instructions: Read the document you have been assigned, then answer the following questions with the help of your group. (2 points each)

Source Document: _____

1. Who is the author? What do you know about the author?

2. When was this document published?

3. For what purpose was the document written? How might that affect the message?

4. What is the main idea of the document? What is the author arguing?

5. What is the document saying about the control and use of natural resources?

Name: _____

Part 2

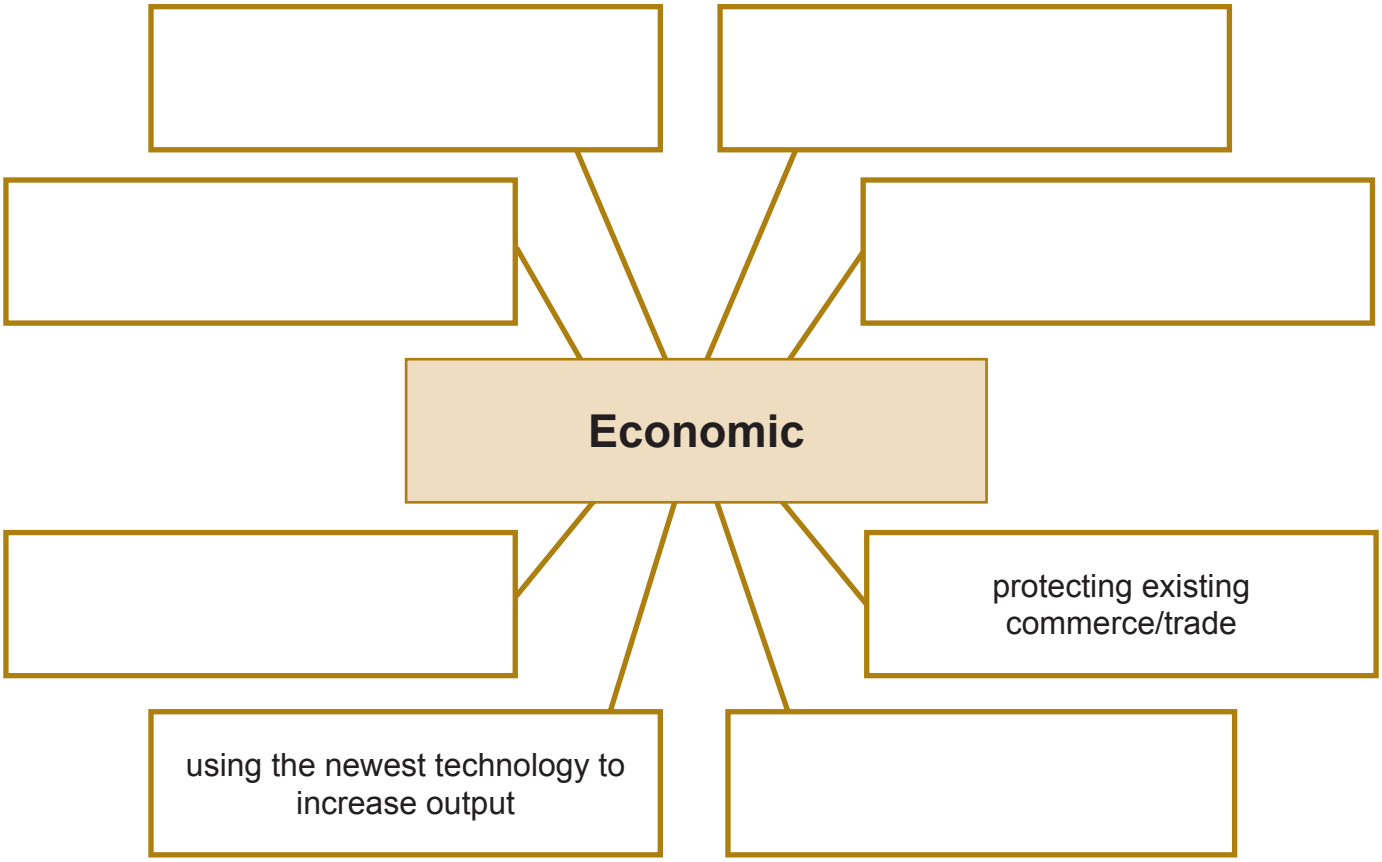
Instructions: Choose some especially poignant quotes that best represent the author's opinion regarding the following:

- national security and strategic advantage (political matters)
- moral issues raised by the search for national hegemony, Social Darwinism, and the missionary impulse (social matters)
- material issues such as land, resources, and technology (economic matters)

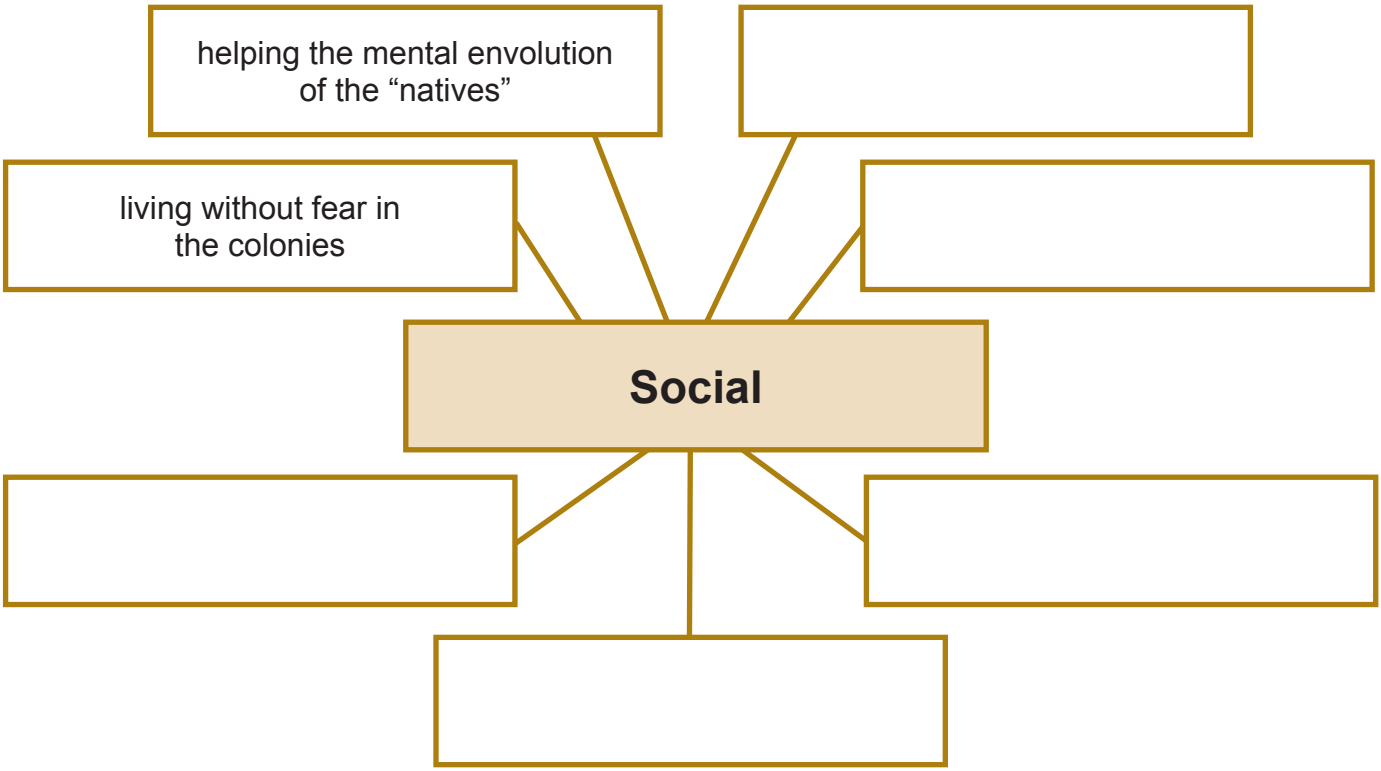
You may or may not find relevant quotes for each item listed above. Write your quotes below and in the space designated around the classroom. Be prepared to discuss your quotes with the class. (5 points)

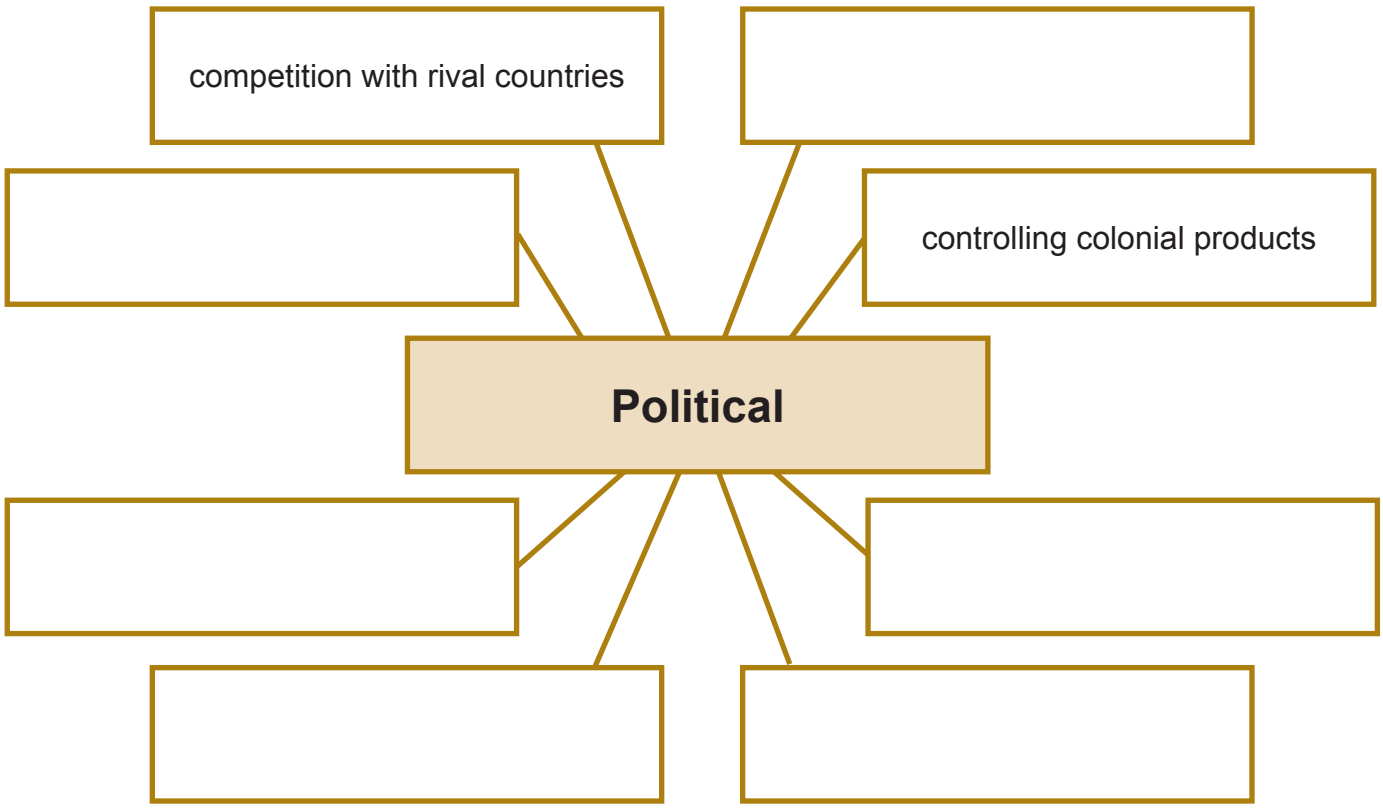
Name: _____

Instructions: Use the quotes shared in class to summarize the reasons imperial leaders used to justify colonizing other parts of the world. Each diagram has been started for you. Fill in the remaining spaces with details about each line of "reasoning." (5 points per web)



Name: _____


helping the mental envolution of the "natives"
living without fear in the colonies
Social


competition with rival countries
controlling colonial products
Political

Name: _____

Instructions: Read the information cards in the folders your group receives. Respond to each of the questions below using the information provided on the associated information cards. (2 points each)

Wild Rubber in the Brazilian Amazon

1. How is rubber "tapped"?

_____

_____

2. In the early 1900s, where were most rubber trees in South America located?

_____

_____

3. How many species of wild rubber trees are there in South America? What are their scientific names?

_____

_____

4. Look at the map of wild rubber trees in South America. What do you notice about where they are located?

_____

_____

Human Innovation and the Changing Uses of Rubber

5. What innovation changed the properties of rubber?

_____

_____

6. How did the new process make "gum" more useful?

_____

_____

Name: _____

7. What new products and uses were possible once rubber was vulcanized?

_____

_____

8. As rubber became more useful, how did the rubber producers react?

_____

_____

The Automobile Industry

9. How was vulcanized rubber first used in the manufacture of automobiles?

_____

_____

10. What was the advantage of using a conveyor belt?

_____

_____

11. How many automobiles were produced in 1900? In 1920?

1900 = _____ 1920 = _____

12. By what percentage did the number of automobiles produced increase between 1900 and 1920?

_____

_____

Consumer Demand for Rubber Products

13. When was the car advertisement published? What is it announcing to consumers?

_____

_____

Name: _____

14. What audience does this car advertisement target?

_____

_____

15. When was the shoe advertisement published? What is innovative about the brand of shoes at this time?

_____

_____

16. What audience does this shoe advertisement target?

_____

_____

The Decline of the Amazonian Rubber Production

17. Which areas of the world exported the most rubber from 1890 to 1910?

_____

_____

18. What happened to Amazonian rubber exports after 1910?

_____

_____

19. By 1919, how did Amazonian rubber exports compare with the exports in 1900?

_____

_____

20. What was the trend in world production of rubber between 1910 and 1919?

_____

_____

Name: _____

Plantation Rubber vs. Wild Rubber

21. What was the world's main source of rubber after 1915?

_____

_____

22. How was Amazonian rubber obtained?

_____

_____

23. What is leaf blight?

_____

_____

24. How did leaf blight affect the Amazonian rubber plantations?

_____

_____

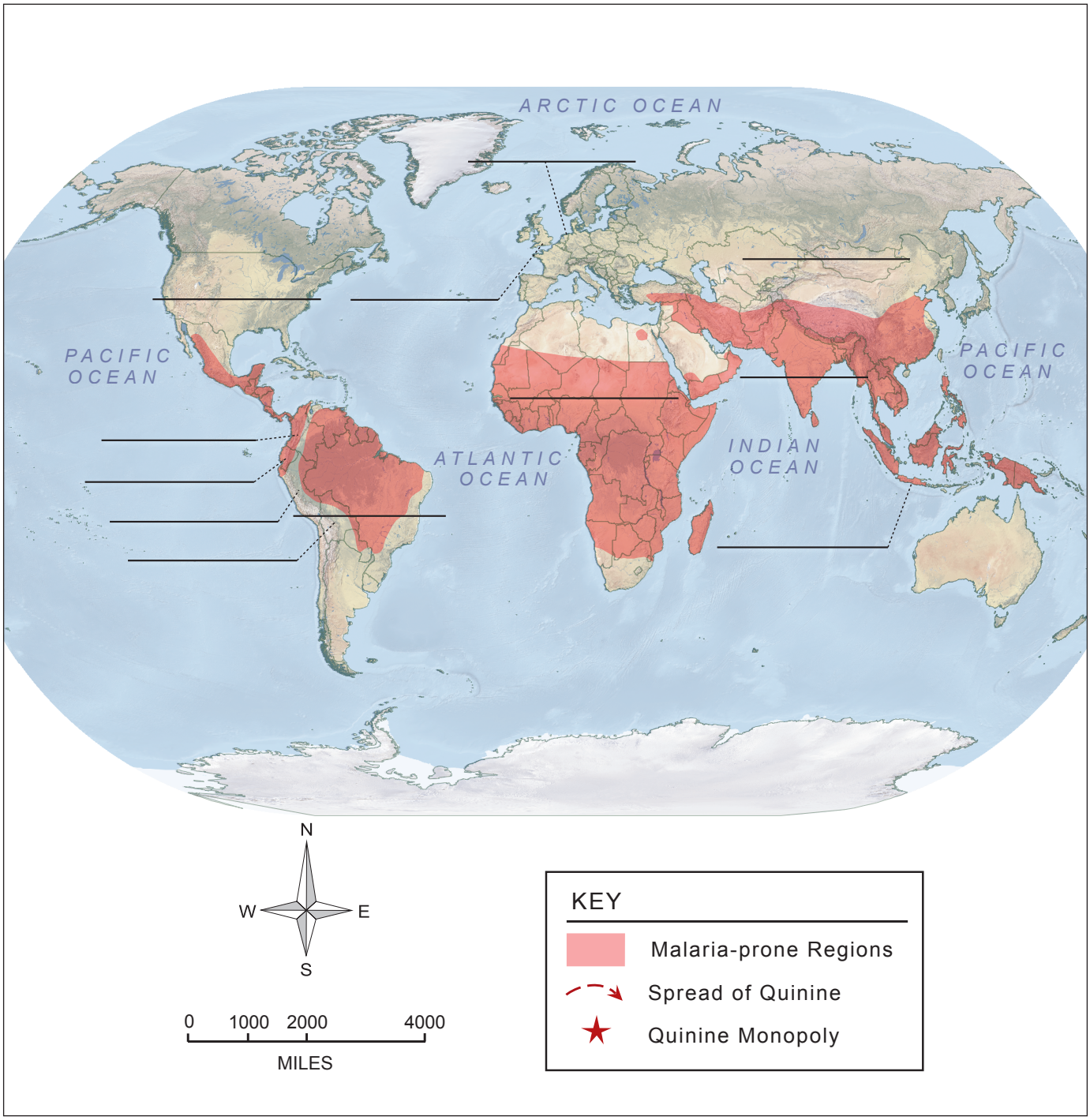
Name: _____

Instructions: Using information from today's lesson, write an essay in response to the question below. (10 points)

25. Why did the Amazon rubber "boom" go "bust"?

Name: _____

Instructions: Follow the instructions on **Part 1—Mapping the History of Quinine** to complete this map. Use a world atlas to help you. (19 points total for all five mapping activities.)



Name: _____

Instructions: This lesson follows one natural resource, the *Cinchona* tree, as an example of the role that natural resources played in helping stimulate development of industrial economies. As the United States, Japan, and many European nations industrialized, other areas of the world provided natural resources to these nations. People around the world debated the various political, social, and economic reasons for direct control of such natural resources. As a result, industrial nations established colonies and created numerous policies that ensured continued access to sought-after resources such as the *Cinchona* tree. This is an interesting example of a tree that was transplanted to various colonies through government intervention and grown in great numbers for its valuable bark.

Answer the questions below to reinforce your understanding of this lesson. (3 points each)

1. What role did the *Cinchona* tree play in the rise of industrial economies in the 19th century?

2. How did the cultivation of the *Cinchona* trees likely affect the natural systems and economies in the colonies?

Name: _____

3. How did the desire for a continuous supply of quinine affect the decisions made by industrial powers about its control and use?

4. What role did the imperial governments play in controlling the world supply of quinine?

Name: _____

Instructions: Read the passages below taken directly from the book *Forestry in British India* by the Inspector General of Forests in India, Berthold Ribbentrop, written in 1900. Respond to the questions below. (3 points each)

In 1865 the first Indian Forest Act was passed…

It became evident that in order to effect the changes required, it was necessary to legislate in order to legalise the settlement and reservation of forest areas…

The Forest Act provides for the constitution [forming] of Reserved forests and Protected forests.

That the wholesale destruction of forests has had the most deteriorating effect on the climate of India is certain…There can be no doubt, whatever may be said to the contrary, that forests tend to increase the rainfall, and that in a warm-climate the denudation of a country diminishes its rainfall and consequently its fertility, is correct… The ground was subsequently cleared for potato fields, and some fine crops of excellent potato crops were gathered. Now, however, the soil has been washed down into the ravines, the fields have to a great extent disappeared, and the barren hillside is cut up by the dry stony beds of Alpine torrents…

…the withdrawal of man's active interference would, under favourable circumstances, be sufficient in time to re-clothe the now denuded areas with forest vegetation…

Railways spread and forest growth disappeared with an incredible rapidity within the lines, partly on the account of the direct demands for them for constructive works and fuel…

…with the advance of modern civilization, the demands both of the trade and of the population increased, whereas the forests diminished in size.

1. What time period is being discussed?

_____

2. What natural resources were in need of conservation?

_____

_____

3. What laws or policies previously provided environmental protection in India?

_____

_____

_____

Name: _____

4. What has been the effect of natural resource overuse on the environment?

5. What was the proposed solution?

6. What influence did the Industrial Revolution and imperialism have on the environment?

7. What spurred conservation efforts?

Name: _____

Instructions: Read the passages below taken from the article you read during Lesson 1, ***California Connections: Paving the Way for a Cleaner Tomorrow***.
Respond to the questions below. (3 points each)

> The rapid industrialization of the last century, however, has created a surplus of carbon dioxide and other gases.
>
> Federal and state laws regulate the emission of greenhouse gases…
>
> Drilling, transporting, and refining oil contributes to air pollution, and can alter and contaminate ecosystems. Burning fossil fuels for energy creates greenhouse gases, such as carbon dioxide.
>
> The confluence of political, geological, and environmental pressures has made the search for fossil fuel alternatives a national imperative.
>
> Government and industry have invested billions of dollars over the last few decades to find an alternative fuel that is practical, sustainable, and clean.
>
> In 2004, California took the lead again by creating the California Hydrogen Highway Network (CaH2Net).
>
> Much of our nation's oil supply comes from politically unstable regions. Some experts believe the world's oil reserves will be depleted within our lifetime. In addition, the remaining oil is getting more and more difficult to extract.

1. What time period is being discussed?

_____

_____

_____

_____

2. What natural resources are in need of conservation?

_____

_____

_____

_____

Name: _____

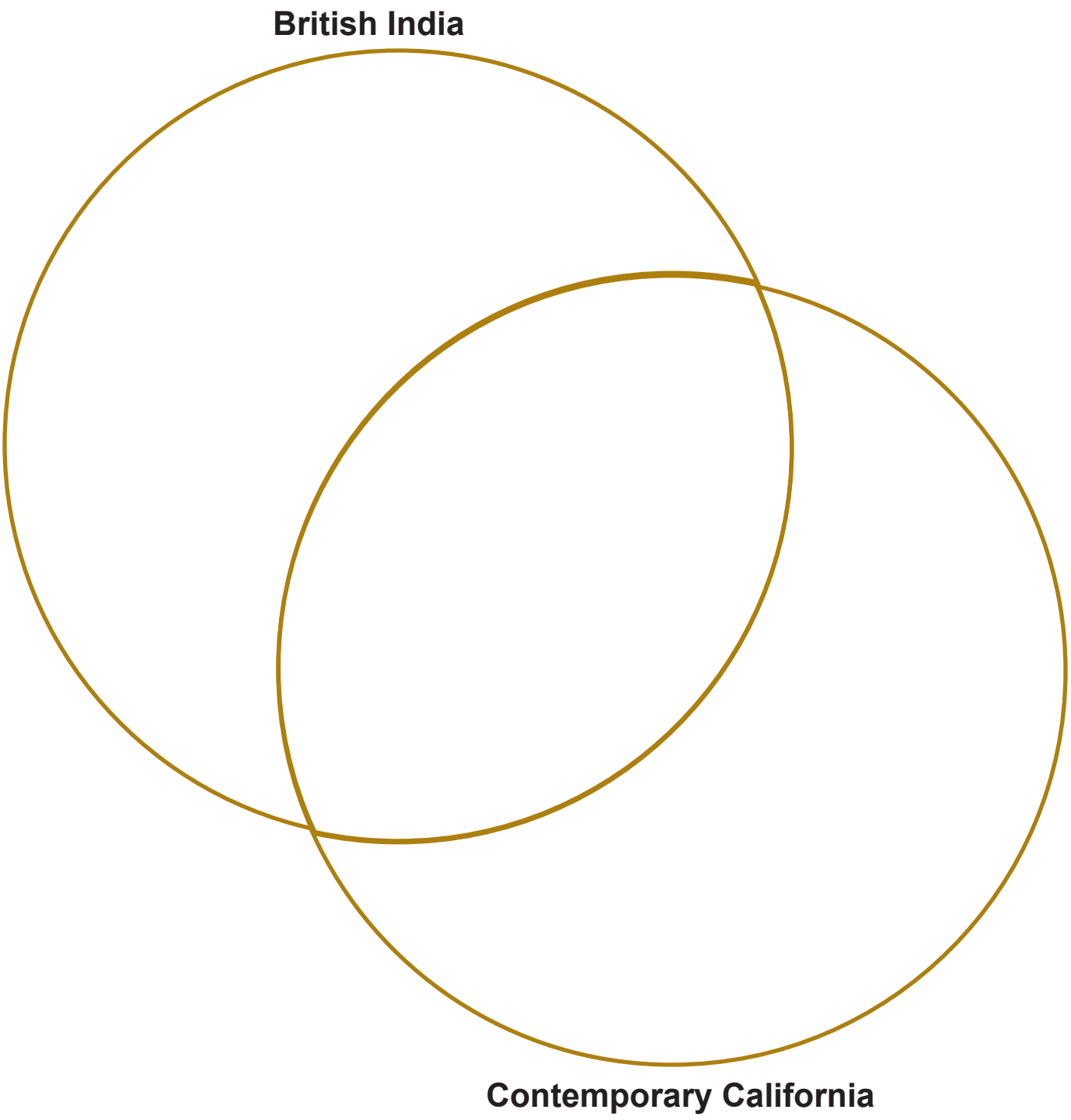
3. What laws or policies previously provided environmental protection in California?

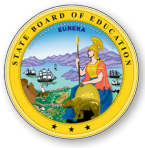
4. What was the effect of natural resource overuse on the environment?

5. What is the proposed solution?

Name: _____

Instructions: Complete the Venn diagram below using information from today's lesson.





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